MODULE 1
TRANSITION TO THE 2003 IRC

Presented By The Counties of Chesterfield, Hanover, and Henrico

The 2003 IRC will be effective November 16, 2005

Building Officials

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Support for this module provided by the Virginia Department of Housing and Community Development

Module 2

- October 18th in Chesterfield from 2-4 & 6-8 at Kings Korner in the Chesterfield Airport
- October 27th in Henrico from 2-4 & 6-8 at the Board Meeting Room

Topics covered in Module 2

- Fire separation distance
- Glazing in Hazardous Locations
- Emergency Egress
- Landings
- Insulation Requirements
- Braced Wall Panels
- Deck Handrails Guardrails
- Ice Protection on Roofs
- Flashing Requirements
- Exterior Air Intake for Masonry Fireplaces

Housekeeping…….

- Exits
- Restrooms
- Breaks

Questions

- Feel free to ask questions during the presentation, there will be time for additional questions at the end of the presentation
- Some questions may be addressed later or at the end of the presentation

Please Note…

- VUSBC Amendments To The Model Codes That Have Not Changed From The 2000 Edition Are Not Included, Since They Do Not Represent A Change.
- Module 2 will review hot topics including some from previous editions of the code

Please Note…

- The subjects covered in this presentation are ***highlights of the code changes*** please refer to your code book for the exact codes

Chapter 3

- Building Planning

Design Criteria

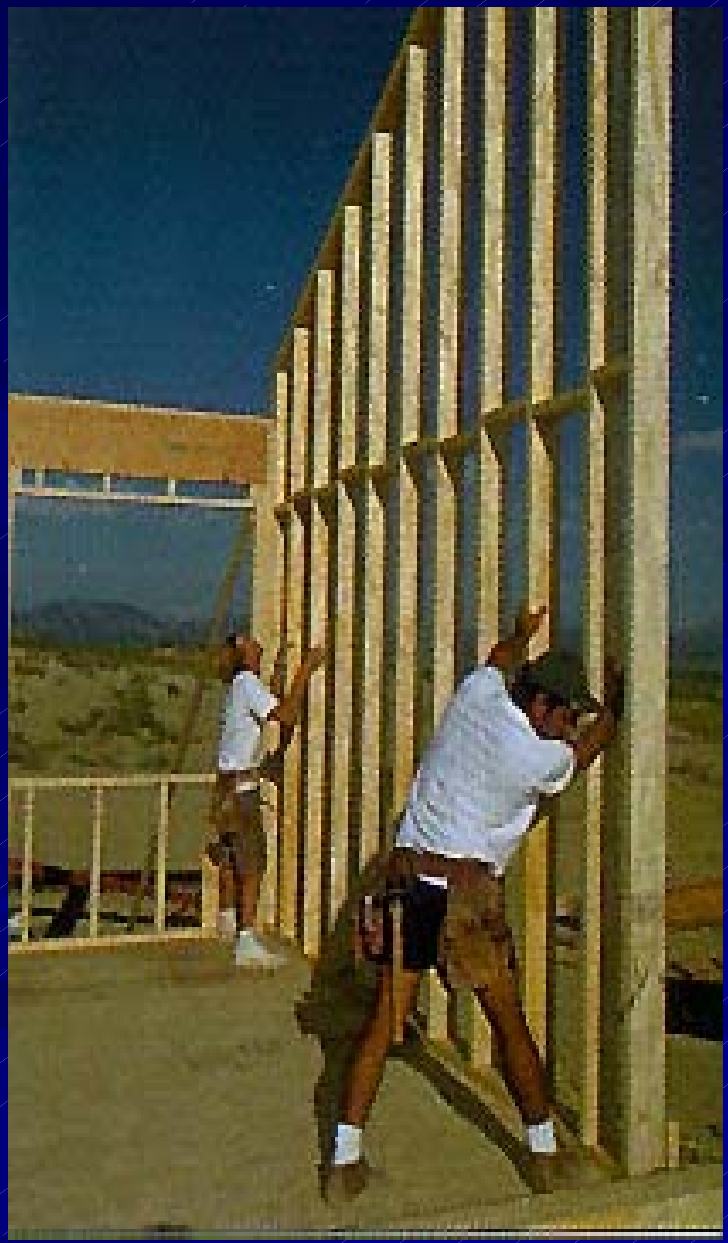
- R301.1.1 Alternate Provisions
- As an alternative to the requirements of section R301.1 the following standards are permitted subject to the limitations of this code and the limitations therein. Where engineered design is used in conjunction with these standards the design shall comply with the International Building Code

Examples:

- American Forest and Paper Association Wood Frame Construction Manual
- American Iron and Steel Institute Standard for Cold-Formed Steel Framing– Prescriptive Method for One- and Two-family Dwellings

Story Height

- R301.3 Establishes a maximum allowed height for a story of a dwelling
- The maximum height allowed for wood frame construction is 12 feet
- The percentage of wall bracing in walls greater than 10 feet up to 12 feet must be increased by a factor of 1.2

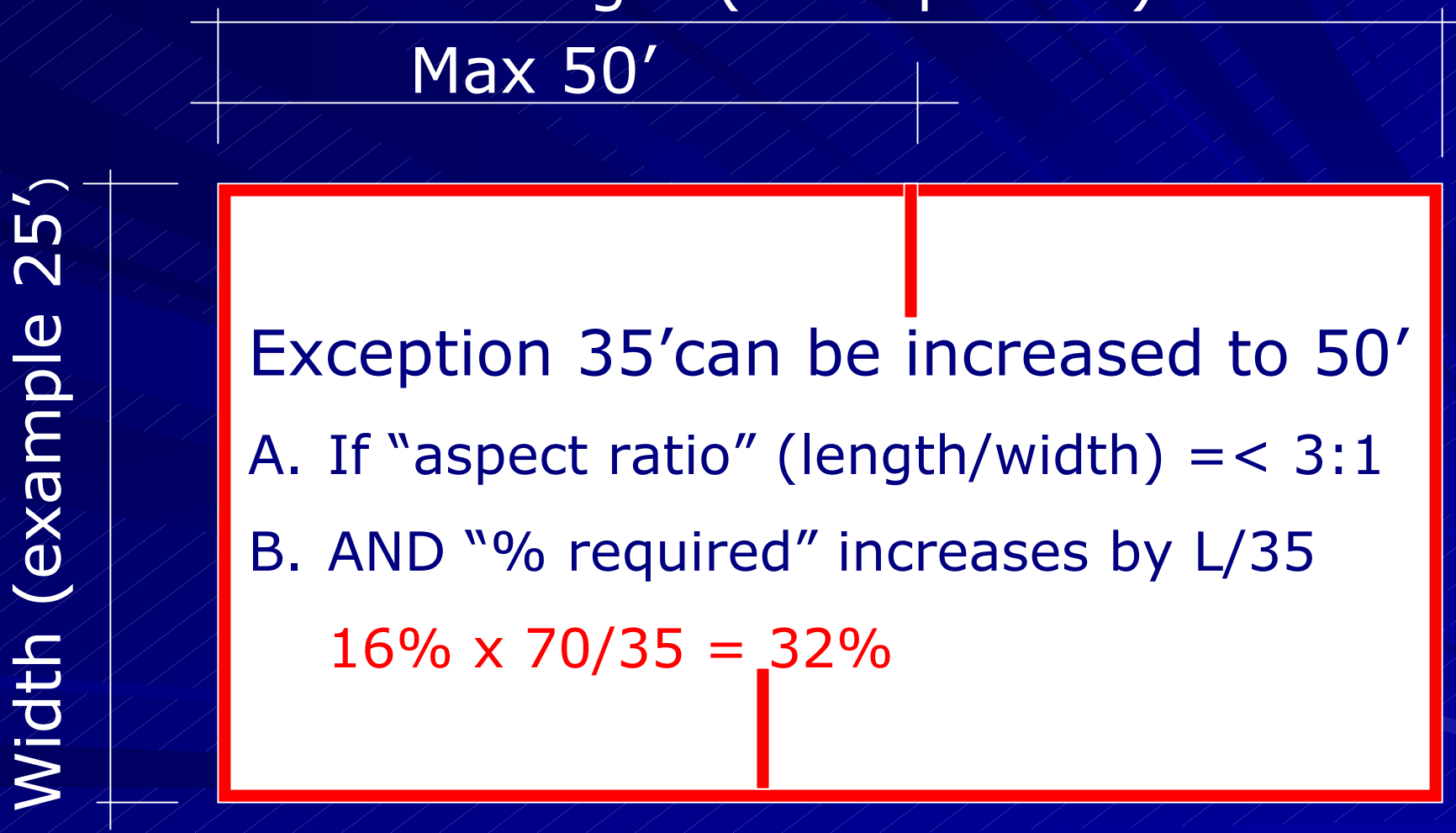


Minimum percentage of braced wall must be 1.2 times the amount required by Table R602.10.1 for a story height above10 feet and up to 12 feet.

TABLE R602.10.1
WALL BRACING

SEISMIC DESIGN CATEGORY OR WIND SPEED	CONDITION	TYPE OF BRACE[b,c]	AMOUNT OF BRACING[a,d,e]
Category A and B ($S_s \leq 0.35g$ and $S_{ds} \leq 0.33g$) or 100 mph and less	One story Top of two or three story	Methods 1, 2, 3, 4, 5, 6, 7 or 8	Located at each end and at least every 25 feet on center but not less than 16% of braced wall line.
	First story of two story Second story of three story	Methods 1, 2, 3, 4, 5, 6, 7 or 8	Located at each end and at least every 25 feet on center but not less than 16% of braced wall line for Method 3 and 25% of braced wall line for Methods 2, 4, 5, 6, 7 or 8.
	First story of three story	Methods 2, 3, 4, 5, 6, 7 or 8	Minimum 48-inch-wide panels located at each end and at least every 25 feet on center but not less than 25% of braced wall line for method 3 and 35% of braced wall line for Methods 2, 4, 5, 6, 7 or 8.

R602.10 Braced Wall Panels



Live Load

- R301.5 Requires that guardrail infill components shall withstand a load of 50 pounds applied horizontally over a 1 square foot area

Table 301.5

MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS
(In pounds per square foot)

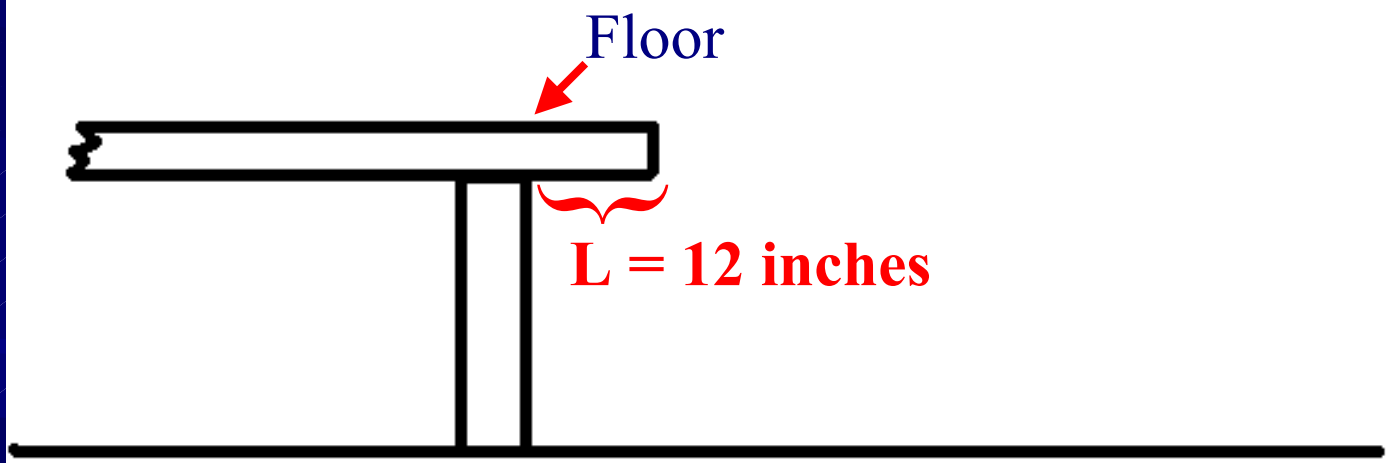
USE	LIVE LOAD
Attics with storage[b]	20
Attics without storage[b]	10
Decks[e]	40
Exterior balconies	60
Fire escapes	40
Guardrails and handrails[d]	200
Guardrails in–fill components[f]	50
Passenger vehicle garages[a]	50[a]
Rooms other than sleeping rooms	40
Sleeping rooms	30
Stairs	40[c]


50 pounds

Deflection

- Table R301.7 Footnote “b” requires that the length of a cantilever { “L” } must be doubled when calculating the allowable deflection
- Footnote “c” provides deflection for aluminum structural members or panels used in roofs or walls of sunroom additions or patio covers

For this example, “L” (12 inches) must be doubled when calculating the allowable deflection. Thus, the allowable deflection for this cantilever is 2L/360 or 24/360 or .066 inch.



Light and Ventilation

- R303.2 Allows a thermally isolated sunroom or patio cover to provide required light and ventilation to an interior room, if there is an appropriately sized opening.
- New definitions have been added for Thermal Isolation and Sunroom Addition

Thermal Isolation

- A separation of conditioned spaces, between a sunroom addition and a dwelling unit, consisting of existing or new wall(s), doors, and/or windows

Sunroom Addition

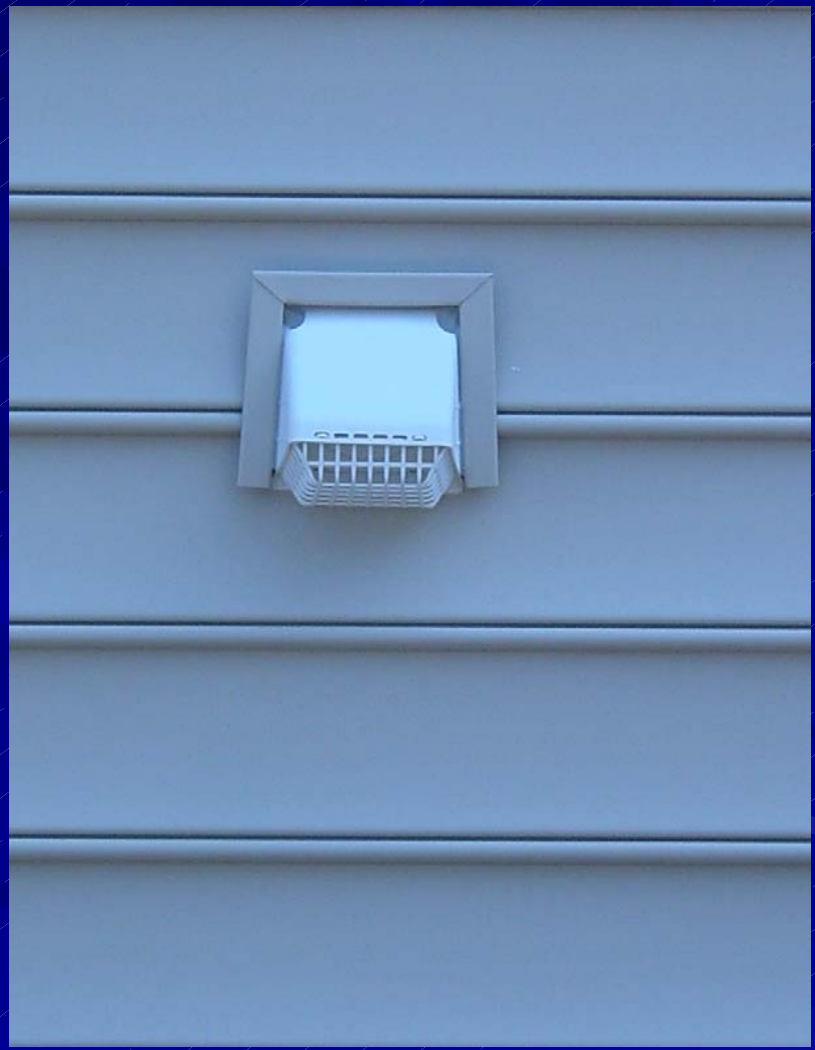
- A one-story structure added to an existing dwelling with a glazing area in excess of 40% of the gross area of the structure's exterior walls and roof

Intake and Exhaust Openings

- R303.4 Requires intake openings are to be located a minimum of 10 feet from a hazardous source or noxious contaminant, or 2 feet below that source (i.e.. Gas appliance vent)
- Exhaust openings are to be located so as to not create a nuisance

Outside Opening Protection

- R303.5 Requires any intake or exhaust opening to be protected with a screen or grille
- There will be an exception for Dryer vents

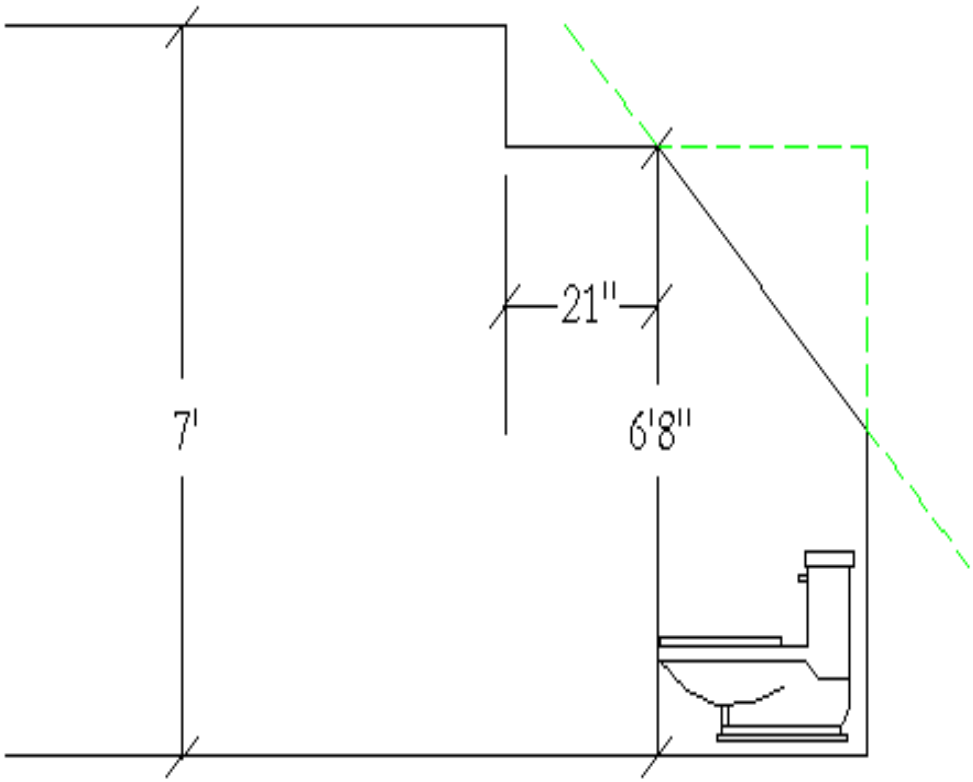


Minimum Room Areas

- R304.2 An exception deletes the minimum square footage requirement in kitchens which used to be 50 square feet

Ceiling Height

- R305.1 A ceiling height of 6 feet 8 inches is now required in a bathroom at the front clearance area of a fixture, 21 inches and at a 30 inch by 30 inch space at a showerhead
- Examples: ½ bath under stairway or 3rd floor bath with sloped ceilings


21"
7'
6'8"

Means of Egress

- R311.2.1 ***Required*** exterior balconies, stairs, and similar exit structures be positively anchored to the primary structure, to resist both vertical and lateral loads. (i.e. front stoop) This shall not be done with toenails or nails subject to withdrawal. Lag and carriage bolts are acceptable

Means of Egress

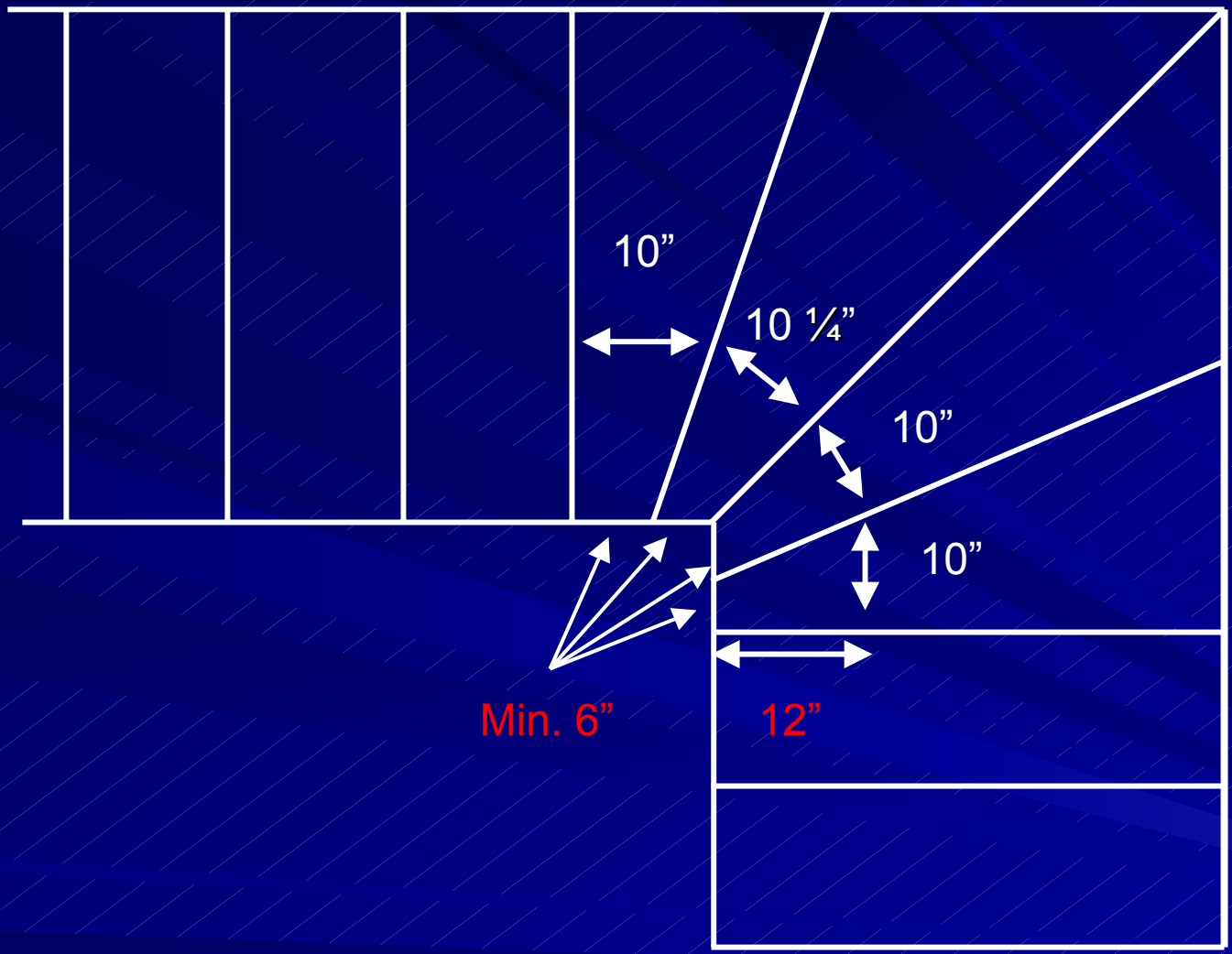
- R311.2.2 Requires that the interior of an enclosed accessible space under a stair must be covered with ½ inch gypsum.
- R311.4.3 Landings required at each side of an exterior door, except where a stairway of 2 or fewer risers is located on the exterior side of a door, other than the required exit door

Means of Egress

- R311.5.4 Requires that stairs with a vertical rise greater than 12 feet shall have an intermediate landing.

Means of Egress

- R311.5.3.2 Requires that on winders the greatest tread depth at the 12 inch walk line shall not exceed the smallest by more than 3/8 inch.



No more than 3/8’ different in tread depth

Means of Egress

- R311.5.5 requires the stairway walking surface of treads and landings shall not be sloped more than ¼ inch per foot
- R311.5.6 requires handrails on stairs with 4 or more risers

Guards

- R312.2 An exception has been added to allow openings on the sides of stair treads that do not exceed 4 3/8 inches

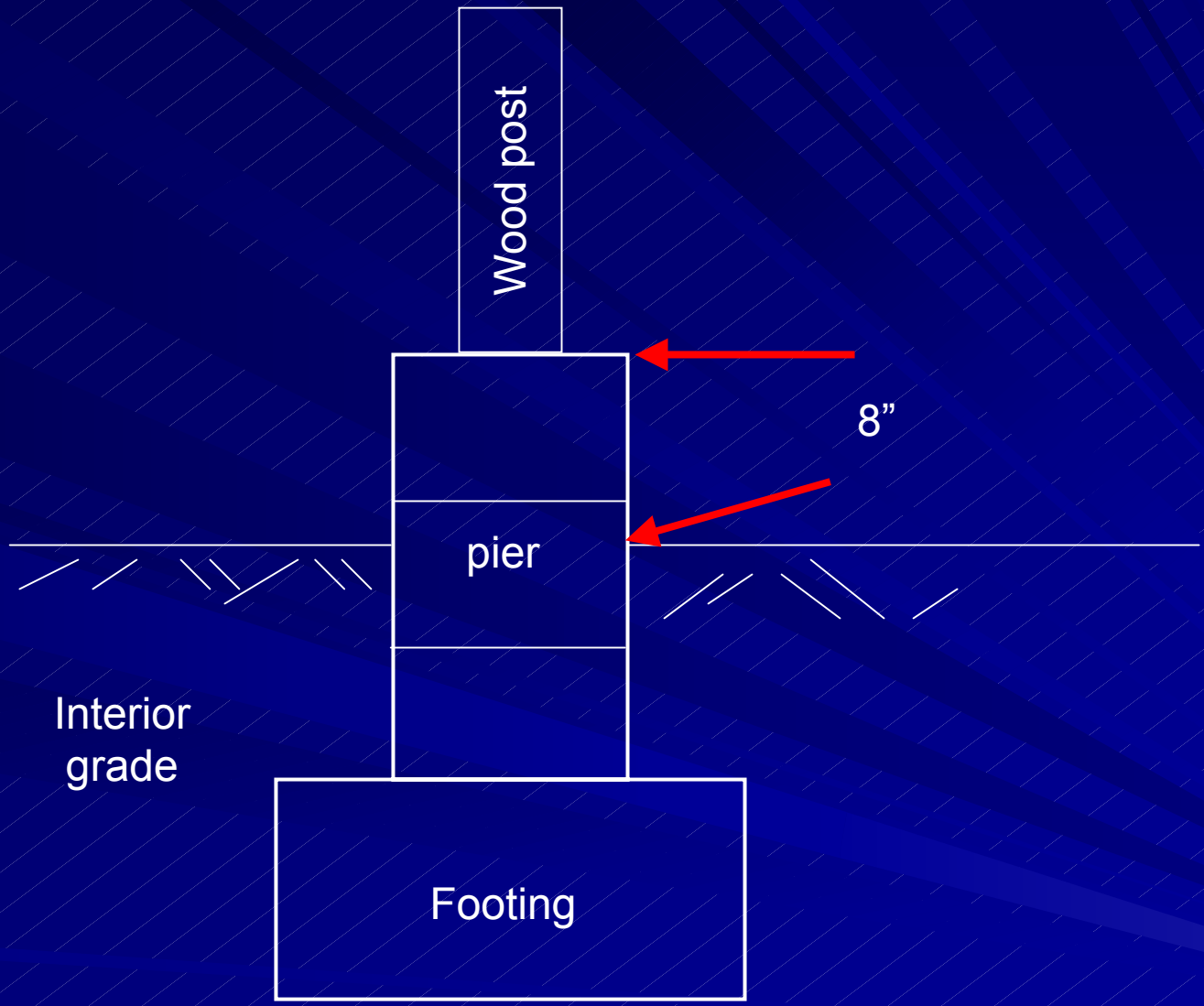
Foam Plastic

- R314.2.7 Allows foam plastic to be applied to sill plates and headers without a thermal barrier, if it is of limited density (1 ½ - 2 lbs. per cubic ft.) and thickness (3 ¼ in.) and flame spread of 25 and smoke development of 450

Protection Against Decay

- R319.1.4 Wood columns shall be decay resistant with the following exception:

  Posts or columns in enclosed crawl spaces or unexcavated areas located within the periphery of the building, supported by a concrete pier or metal pedestal at a height greater than 8 inches from exposed ground, and are separated there from by an impervious moisture barrier


Wood post
8”
pier
Interior
grade
Footing

R323 Flood Resistant Construction

- The 2003 IRC has provisions for flood resistant construction, please see your local building inspection department if you intend to build in a flood plain

Chapter 4

Foundations

Precast Concrete

- R402.3 Allows precast concrete foundations when approved and constructed in accordance with the code and installed to the manufacturer's installation instructions (i.e. Superior Walls Systems)


Link-Belt

Minimum Footing Depth

- R403.1.4.1 Permits footings of freestanding accessory structures less than 400 square feet and an eave height of 10 feet or less to be 12 inches deep
- Footings for ***freestanding decks*** of any size can be 12 inches deep

Access to Under Floor Spaces

- R408.3 Requires a minimum opening of 16x24 inches through a foundation wall and 18x24 inches when through the floor, except when mechanical equipment is present in the crawl space, then the opening is subject to Mechanical Code requirements of 22x30 or sized to allow the removal of largest piece of equipment

Break

We will now have a 10 minute break

Chapter 5

Floors

Structural Glue Laminated Timbers

- R502.1.5 Requires that glued laminated timbers be manufactured and identified as required in AITC A190.1 and ASTM D3737

Floor Cantilevers

- R502.3.3 Floor cantilever spans shall not exceed the nominal depth of the wood floor joist. Floor cantilevers constructed in accordance with Table 502.3.3(1) shall be permitted when supporting a light frame bearing wall and roof only. Floor cantilevers supporting an exterior balcony are permitted when constructed in accordance with Table 502.3.3(2)

Excerpt from: 2001 Wood Frame Construction Manual

Figure 2.1c: Cantilever with loadbearing wall or shearwall - designed for additional load when cantilever > d (see 2.1.3.2c)

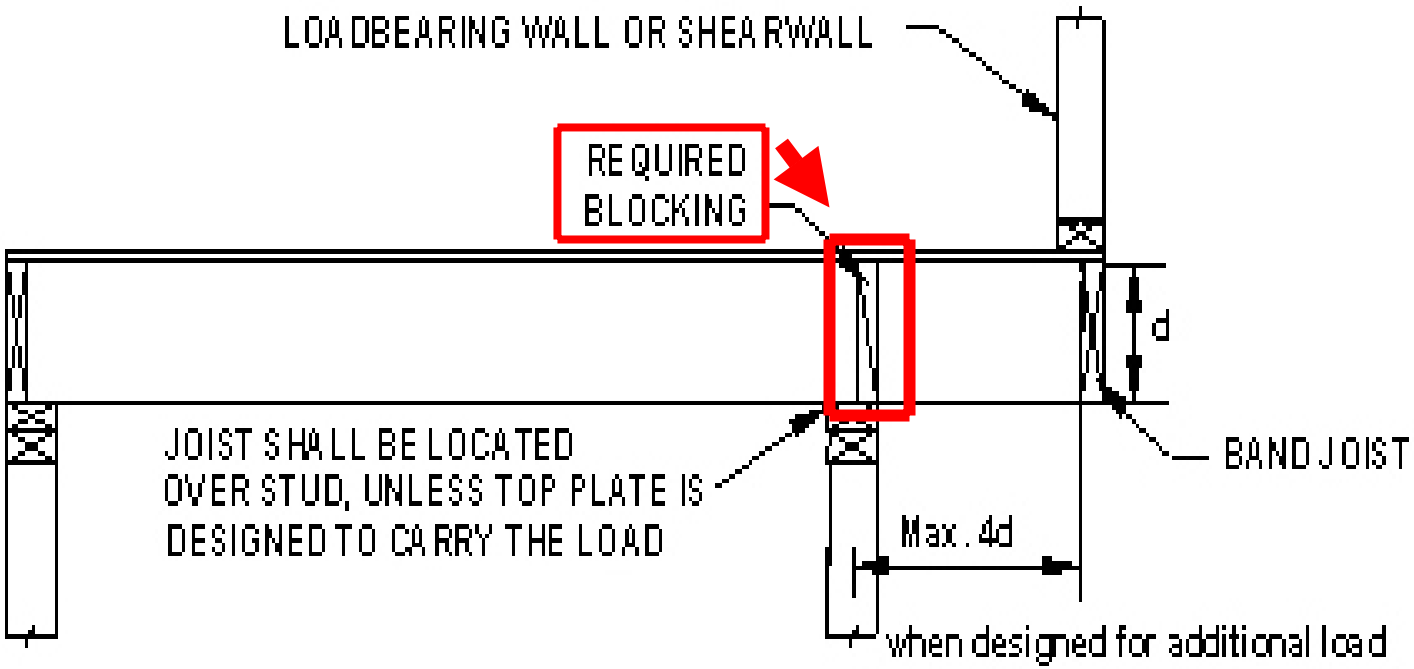


Table R502.3.3(1)

CANTILEVER SPANS FOR FLOOR JOISTS SUPPORTING LIGHT-FRAME EXTERIOR BEARING WALL AND ROOF ONLY[a, b, c, f, g, h]
(Floor Live Load ≤ 40 psf, Roof Live Load ≤ 20 psf)

	Maximum Cantilever Span (Uplift Force at Backspan Support in Lbs.)[d, e]											
	Ground Snow Load											
	≤ 20 psf			30 psf			50 psf			70 psf		
	Roof Width			Roof Width			Roof Width			Roof Width		
Member & Spacing	24 ft.	32 ft.	40 ft.	24 ft.	32 ft.	40 ft.	24 ft.	32 ft.	40 ft.	24 ft.	32 ft.	40 ft.
2 × 8 @ 12″	20″ (177)	15″ (227)	—	18″ (209)	—	—	—	—	—	—	—	—
2 × 10 @ 16″	29″ (228)	21″ (297)	16″ (364)	26″ (271)	18″ (354)	—	20″ (375)	—	—	—	—	—
2 × 10 @ 12″	36″ (166)	26″ (219)	20″ (270)	34″ (198)	22″ (263)	16″ (324)	26″ (277)	—	—	19″ (356)	—	—
2 × 12 @ 16″	—	32″ (287)	25″ (356)	36″ (263)	29″ (345)	21″ (428)	29″ (367)	20″ (484)	—	23″ (471)	—	—
2 × 12 @ 12″	—	42″ (209)	31″ (263)	—	37″ (253)	27″ (317)	36″ (271)	27″ (358)	17″ (447)	31″ (348)	19″ (462)	—
2 × 12 @ 8″	—	48″ (136)	45″ (169)	—	48″ (164)	38″ (206)	—	40″ (233)	26″ (294)	36″ (230)	29″ (304)	18″ (379)

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kN/m^2.

a. Tabulated values are for clear-span roof supported solely by exterior bearing walls.
b. Spans are based on No. 2 Grade lumber of Douglas fir-larch, hem-fir, southern pine, and spruce-pine-fir for repetitive (3 or more) members.
c. Ratio of backspan to cantilever span shall be at least 3:1.
d. Connections capable of resisting the indicated uplift force shall be provided at the backspan support.
e. Uplift force is for a backspan to cantilever span ratio of 3:1. Tabulated uplift values are permitted to be reduced by multiplying by a factor equal to 3 divided by the actual backspan ratio provided (3/backspan ratio).
f. See Section R301.2.2.2.2, item 1, for additional limitations on cantilevered floor joists for detached one- and two-family dwellings in Seismic Design Categories D_1 and D_2 and townhouses in Seismic Design Categories C, D_1, and D_2.
g. A full-depth rim joist shall be provided at the cantilevered end of the joists. Solid blocking shall be provided at the cantilever support.
h. Linear interpolation shall be permitted for building widths and ground snow loads other than shown.

Table R502.3.3(2)

CANTILEVER SPANS FOR FLOOR JOISTS SUPPORTING EXTERIOR BALCONY[a, b, e, f]

Member Size	Spacing	Maximum Cantilever Span (Uplift Force at Backspan Support in Lbs.)[c, d]		
		Ground Snow Load		
		≤ 30 psf	50 psf	70 psf
2 × 8	12″	42″ (139)	39″ (156)	34″ (165)
2 × 8	16″	36″ (151)	34″ (171)	29″ (180)
2 × 10	12″	61″ (164)	57″ (189)	49″ (201)
2 × 10	16″	53″ (180)	49″ (208)	42″ (220)
2 × 10	24″	43″ (212)	40″ (241)	34″ (255)
2 × 12	16″	72″ (228)	67″ (260)	57″ (268)
2 × 12	24″	58″ (279)	54″ (319)	47″ (330)

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kN/m^2.

a. Spans are based on No. 2 Grade lumber of Douglas fir-larch, hem-fir, southern pine, and spruce-pine-fir for repetitive (3 or more) members.

b. Ratio of backspan to cantilever span shall be at least 2:1.

c. Connections capable of resisting the indicated uplift force shall be provided at the backspan support.

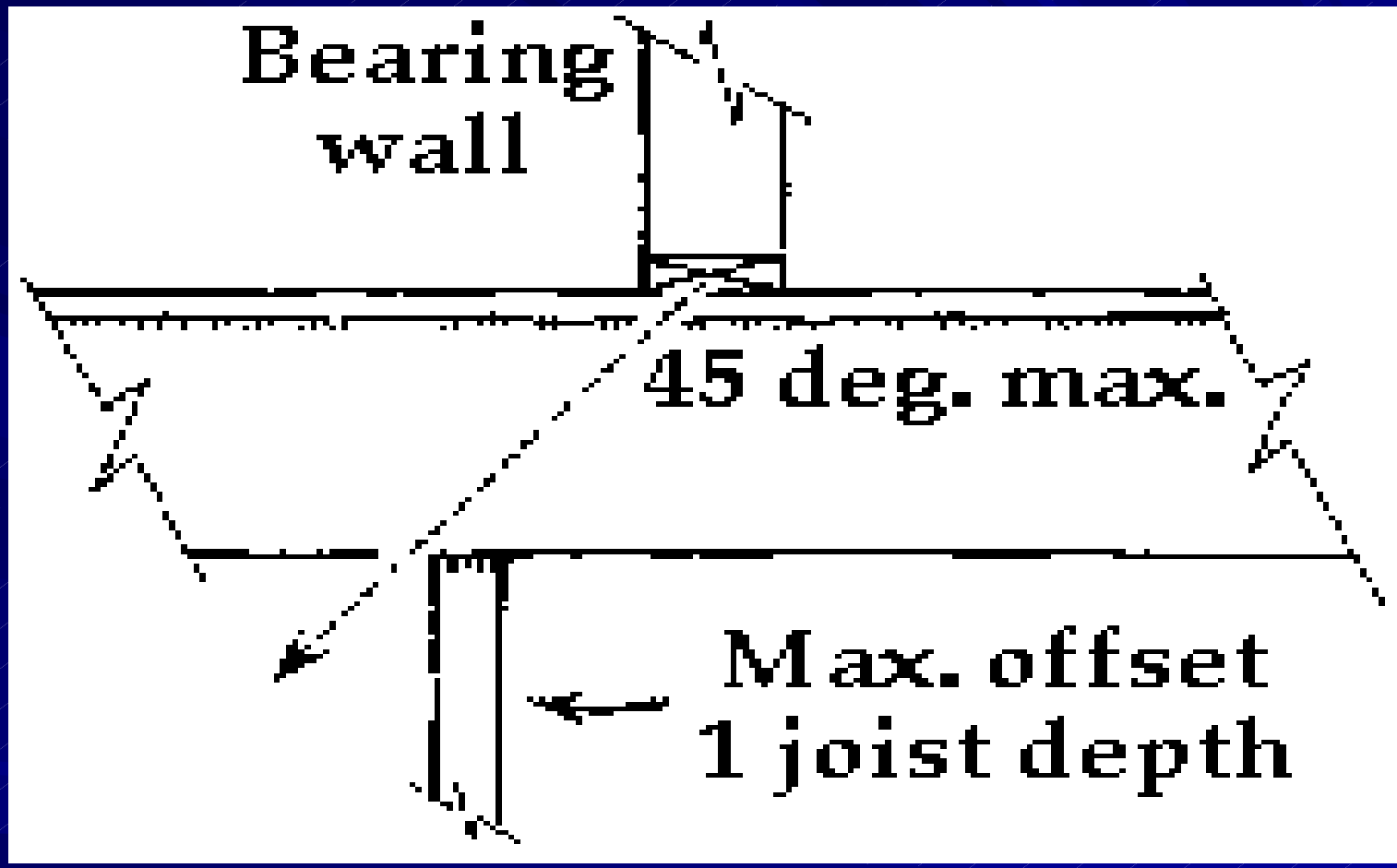
d. Uplift force is for a backspan to cantilever span ratio of 2:1. Tabulated uplift values are permitted to be reduced by multiplying by a factor equal to 2 divided by the actual backspan ratio provided (2/backspan ratio).

e. A full-depth rim joist shall be provided at the cantilevered end of the joists. Solid blocking shall be provided at the cantilevered support.

f. Linear interpolation shall be permitted for ground snow loads other than shown.

Joists Under Bearing Partitions

- Requires the offset of a bearing partition above perpendicular joists be limited to the depth of the joists


Bearing
wall
45 deg. max.
Max. offset
1 joist depth

Vapor Retarder for Slabs

- R506.2.3 Requires 6 mil polyethylene as a vapor barrier in slabs in habitable areas
- The code now allows the vapor retarder to be omitted in any garage, not just in detached garages

Chapter 6

Wall Construction

Design and Construction

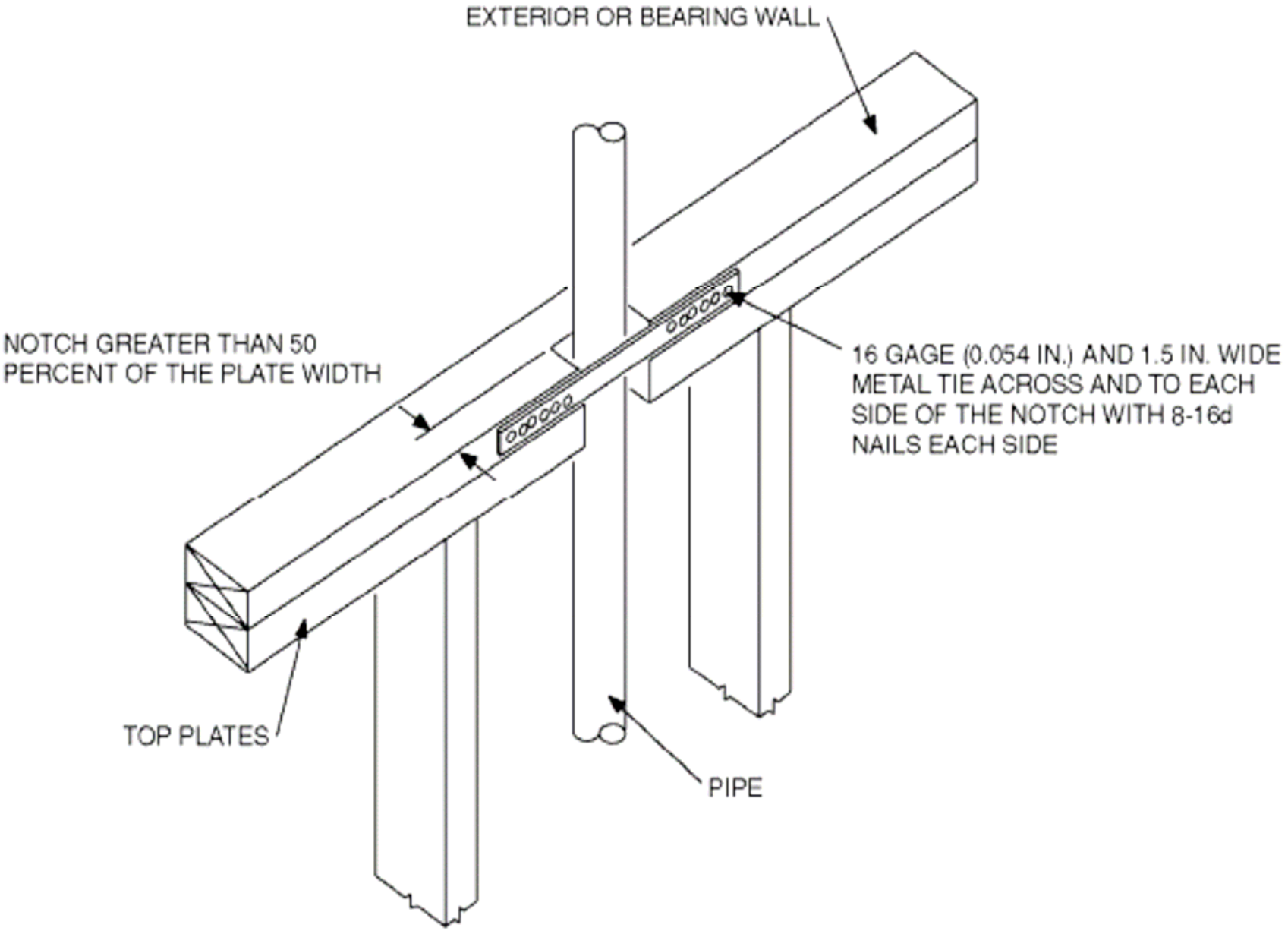
- R602.3 Requires any wall covered in foam plastic sheathing be braced in accordance with R602.10, with bracing fastened directly to the structural members of the wall

Wall Stud Spacing

- R602.3.1 Has an exception that allows utility grade studs up to 10 feet in height to be used only for interior non-load bearing walls

Cutting, Drilling and Notching of Top Plates

- R602.6.1 Requires an ***approved strap*** be attached with ***8 – 16D*** nails per side when the top plate is drilled, cut, or notched in excess of 50% of its width


EXTERIOR OR BEARING WALL
NOTCH GREATER THAN 50 PERCENT OF THE PLATE WIDTH
16 GAGE (0.054 IN.) AND 1.5 IN. WIDE METAL TIE ACROSS AND TO EACH SIDE OF THE NOTCH WITH 8-16d NAILS EACH SIDE
TOP PLATES
PIPE

Chapter 7

Wall Covering

Interior Wall Covering

- R702.1 Allows interior masonry veneer to be supported on floors provided they are designed to support the load
- Allows interior masonry veneer to be constructed without an air space


Brick Wall

Gypsum Backer

R702.4.3 Water resistant gypsum backing shall not be used in the following locations:

1. Over vapor retarder in a shower or bathtub compartment
2. Where there will be direct exposure to water or in areas subject to continuous high humidity.

Masonry Veneer Supported by Steel Angle

- R703.7.2.1 Limits the height of masonry veneer supported by steel angle to 12 feet 8 inches
- Brick stops are not required on steel angle on roof slopes up to 7/12, and requires 3x3x1/4 inch brick stops welded to steel angle on roofs from 7/12 to 12/12

Lintels Supporting Masonry Veneer Table 703.7.3

ALLOWABLE SPANS FOR LINTELS SUPPORTING MASONRY VENEER[a,b,c]

SIZE OF STEEL ANGLE[a,c] (inches)	NO STORY ABOVE	ONE STORY ABOVE	TWO STORIES ABOVE	NO. OF 1/2" OR EQUIVALENT REINFORCING BARS[c]
3 x 3 x 1/4	6'-0"	4'-6"	3'-0"	1
4 x 3 x 1/4	8'-0"	6'-0"	4'-6"	1
5 x 3 1/2 x 5/16	10'-0"	8'-0"	6'-0"	2
6 x 3 1/2 x 5/16	14'-0"	9'-6"	7'-0"	2
2-6 x 3 1/2 x 5/16	20'-0"	12'-0"	9'-6"	4

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Long leg of the angle shall be placed in a vertical position.

b. Depth of reinforced lintels shall not be less than 8 inches and all cells of hollow masonry lintels shall be grouted solid. Reinforcing bars shall extend not less than 8 inches into the support.

c. Steel members indicated are adequate typical examples; other steel members meeting structural design requirements may be used.

Veneer Ties

- R703.7.4.1 Requires veneer ties be placed no more than 24 inches on center both horizontally and vertically, and support no more than 2.67 square feet of wall area

Fiber Cement Siding

- R703.10.2 Requires lap siding to be lapped 1 ¼ inches and ends to be sealed with caulking, covered with an H-section joint cover, or located over a strip of flashing. Fastening shall be to manufacturer installation instructions

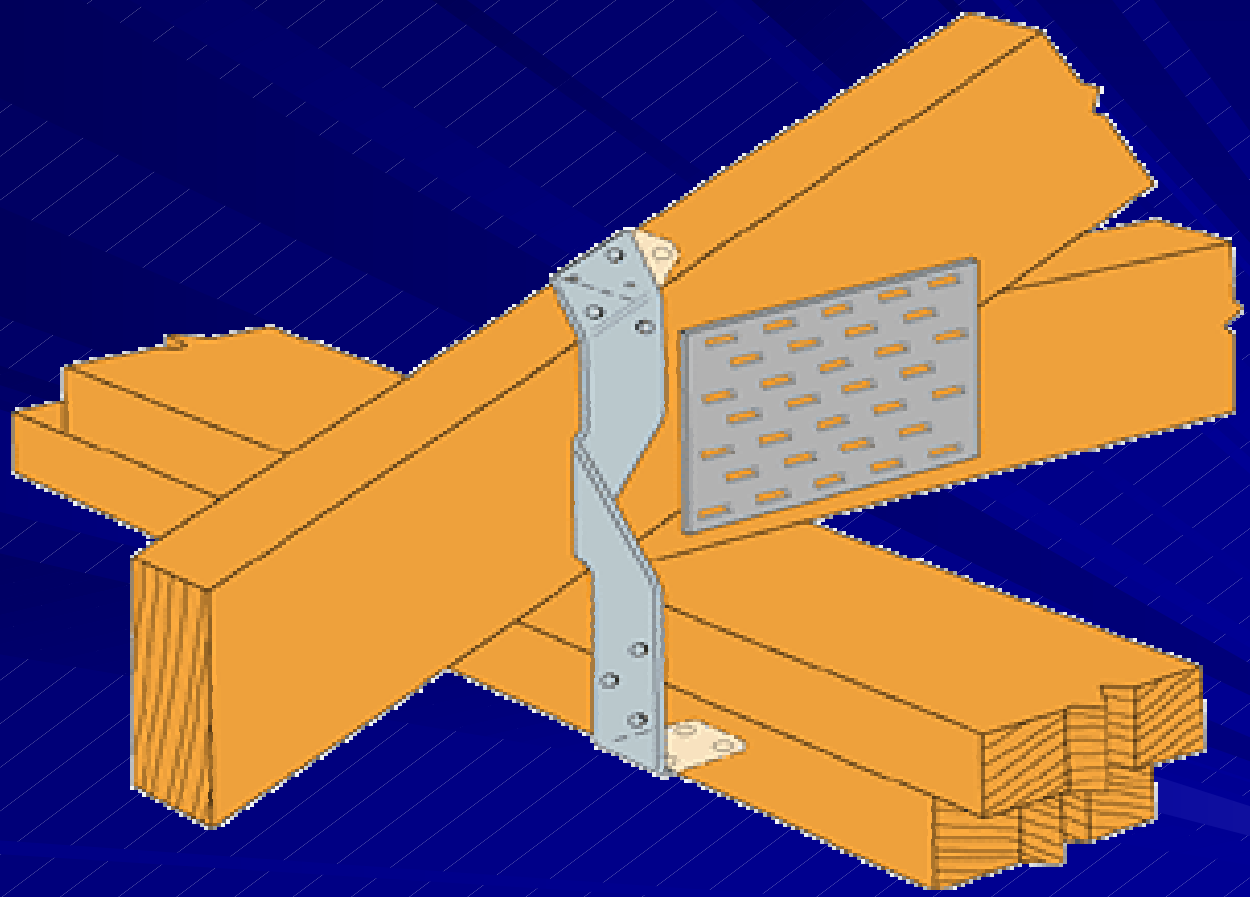

HARDIPLANK
LAP SIDING

Chapter 8

Roof-Ceiling Construction

Truss to Wall Connections

- Requires a truss to wall connector capable of withstanding 175 lbs. of uplift
- Truss manufacturer specifications may require connectors capable of withstanding greater uplift pressures, please refer to your truss specs
- Requires a continuous load path from tie downs to foundation



Chapter 9

Roof Assemblies

Weather Protection

- R903.2 Requires flashing be installed in a manner to prevent moisture from entering the wall and roof through joints in copings, through moisture permeable materials, and at intersections with parapet walls and other penetrations through the roof plane

Chapter 10

Chimneys and Fireplaces

Spark Arrestors for Masonry Chimneys

- R1001.6.1 Sets specific requirements for spark arrestors, when installed

Spark Arrestors for Masonry Chimneys

1. Net free area not less than 4 times the flue outlet area.
2. Screen shall have heat corrosion resistance equivalent to 19 ga. Steel or 24 ga. Stainless steel

Spark Arrestors for Masonry Chimneys

Requirements continued:

3. Opening shall not permit passage of spheres with a diameter greater than ½ inch, nor block spheres with a diameter less than 3/8 inch

4. Must be accessible for cleaning and removable to clean chimney flue

YOU BE THE INSPECTOR

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Questions

Please visit the ICC website at www.iccsafe.org for information and to purchase code books

Module 2

Module 2 will be held on the following dates:

October 18th in Chesterfield from 2-4 & 6-8

October 27th in Henrico from 2-4 & 6-8

The End